



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

|   |                         |                        |                               |                  |
|---|-------------------------|------------------------|-------------------------------|------------------|
| APPLICATION NO.   | FILING DATE             | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO.           | CONFIRMATION NO. |
| 10/628,290  | 07/29/2003              | Alain Vallee           | 040699-0157                   | S390             |
| 36183 7590 12/28/2006<br>PAUL, HASTINGS, JANOFSKY & WALKER LLP<br>P.O. BOX 919092<br>SAN DIEGO, CA 92191-9092 |                         |                        | EXAMINER<br>THOMPSON, MELISSA |                  |
|   |                         | ART UNIT<br>1745       | PAPER NUMBER                  |                  |
| SHORTENED STATUTORY PERIOD OF RESPONSE<br>3 MONTHS  | MAIL DATE<br>12/28/2006 | DELIVERY MODE<br>PAPER |                               |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

|                              |                        |                     |
|------------------------------|------------------------|---------------------|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |
|                              | 10/628,290             | VALLEE ET AL.       |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |
|                              | Melissa B. Thompson    | 1745                |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 30 November 2006.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.  
 4a) Of the above claim(s) 1-14 and 21-24 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 15-20 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 29 July 2003 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :12/01/2003, 1/21/2005, 2/10/2006.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election with traverse of Group III (claims 15 –20), a process for making a battery, in the reply filed on 30 November 2006 is acknowledged. The traversal is on the ground(s) that "the subject matter of all of claims 1-24 is sufficiently related that a thorough and complete search for the subject matter of the elected claims would necessarily encompass a thorough and complete search for the subject matter of the non-elected claims". This is not found persuasive because the process is not the only way to prepare a battery and by examining all claims would be burdensome.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 17 and 19 recite the limitation "second side" in step a, line 1. There is insufficient antecedent basis for this limitation in the claim.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 15-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Velasquez et al. (U.S. Patent Number 5,670,273).

Velasquez et al. disclose a process for fabricating electrochemical cells and batteries wherein the successive anode and cathode layers are separated by a polymeric electrolyte layer (columns 1 and 2, lines 66-2). Velasquez et al. disclose forming an anode film onto at least one surface of an anode current collector and forming a cathode film onto at least one surface of a cathode current collector (column 2, lines 9-15). Velasquez et al. disclose that the anode comprises, material well known in the art, lithium (column 7, lines 18-23). The cathode slurry was prepared with an active material comprising a lithium salt, carbon black, and a solution containing acetone, dibutyl phthalate, and surfactant (column 9 and 10, lines 66-4) and then laminated onto the current collector to form a film (column 10, lines 14-17). Velasquez et al. disclose that the electrolyte composition comprises an inorganic ion salt, a solid polymer matrix and from 0 to ~80 weight percent electrolyte solvent (column 8, lines 41-49). The mixture is cured to form a solid electrolyte (column 5, lines 36-38); the process of curing is done by cross-linking the polymers by heating, UV light, or electron beam (column 5, lines 11-17). Velasquez et al. disclose that the cell is prepared by positioning a polymeric matrix between the anode and cathode and then filling the pores of the polymeric matrix with the electrolyte solution (column 19, lines 24-43).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 18 –19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Velasquez et al. (U.S. Patent Number 5,670,273).

Velasquez et al. disclose a process for fabricating electrochemical cells and batteries wherein the successive anode and cathode layers are separated by a polymeric electrolyte layer (columns 1 and 2, lines 66-2). Velasquez et al. disclose forming an anode film onto at least one surface of an anode current collector and forming a cathode film onto at least one surface of a cathode current collector (column 2, lines 9-15). Velasquez et al. disclose that the anode comprises, material well known in the art, lithium (column 7, lines 18-23). The cathode slurry was prepared with an active material comprising a lithium salt, carbon black, and a solution containing acetone, dibutyl phthalate, and surfactant (column 9 and 10, lines 66-4) and then laminated onto the current collector to form a film (column 10, lines 14-17). Velasquez et al. disclose that the electrolyte composition comprises an inorganic ion salt, a solid polymer matrix and from 0 to ~80 weight percent electrolyte solvent, and more preferably from ~60 to ~80 weight percent (column 8, lines 41-49). The mixture is cured to form a solid

electrolyte (column 5, lines 36-38); the process of curing is done by cross-linking the polymers by heating, UV light, or electron beam (column 5, lines 11-17) Velasquez et al. disclose that the cell is prepared by positioning a polymeric matrix between the anode and cathode and then filling the pores of the polymeric matrix with the electrolyte solution (column 19, lines 24-43). Velasquez does not include the amount of solvent by weight that remains in the electrolyte after a portion has been evaporated out. By curing the electrolyte to cross-link the polymer, it is inherent that some amount of the solvent evaporates out leaving a smaller percentage of solvent left in the electrolyte. Velasquez et al. does not teach the number range of solvent left in the electrolyte.

It would have been obvious to one of ordinary skill in the art at the time of the invention that by curing an electrolyte part of the solvent will have evaporated leaving a smaller portion of solvent in the electrolyte. By optimizing the amount of energy needed to cure the electrolyte, making the process efficient, would result in the necessary amount of solvent being evaporated. Therefore, one of ordinary skill would choose to optimize the process and evaporate out the amount needed to cure the electrolyte.

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Velasquez et al. (U.S. Patent Number 5,670,273) in view of Schutts et al. (U.S. Patent Number 6,136,476).

Velasquez et al. include all of the elements required for the rejection of claim 15, as discussed in the rejection above. Velasquez et al. does not include forming a bi-face electrochemical cell.

Schutts et al. teach an electrochemical cell with a cathode, (containing electronically conductive material, a binder, and lithium salt) a negative electrode comprising lithium, and an electrolyte solution. Schutts et al. teach creating a bi-face cell in which an electrolyte is disposed between an anode film and a cathode film, with a central cathode current collector between each cathode film (column 8, lines 4-63 and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to form a bi-face cell. Velasquez et al. teach that a mono-face cell configuration may alternatively be employed (column 8, lines 62-63), demonstrating that it would be easy to add a cathode film to a second side of a current collector to create a bi-face cell. This bi-face cell allows for stacking several cells together to create a battery.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Velasquez et al. (U.S. Patent Number 5,670,273) in view of Schutts et al. (U.S. Patent Number 6,136,476).

Velasquez et al. include all of the elements required for the rejection of claim 19, as discussed in the rejection above. Velasquez et al. does not include forming a bi-face electrochemical cell and drying the electrolyte on a second side of the cathode film.

Schutts et al. teach an electrochemical cell with a cathode, (containing electronically conductive material, a binder, and lithium salt) a negative electrode comprising lithium, and an electrolyte solution. Schutts et al. teach creating a bi-face cell in which an electrolyte is disposed between an anode film and a cathode film, with a central cathode current collector between each cathode film (column 8, lines 4-63 and Figure 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to dry the electrolyte on a second side of the cathode film to evaporate out some of the solvent since it is well known in the art to perform the same process for the same purpose. Drying the electrolyte on the second side of the cathode film is done to cure the electrolyte for the same reason that the electrolyte is dried on the first side of the cathode film.

It would have been obvious to one of ordinary skill in the art at the time of the invention to form a bi-face cell. Velasquez et al. teach that a mono-face cell configuration may alternatively be employed (column 8, lines 62-63), demonstrating that it would be easy to add a cathode film to a second side of a current collector to create a bi-face cell. This bi-face cell allows for stacking several cells together to create a battery.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa B. Thompson whose telephone number is (571)

272-2758. The examiner can normally be reached on Monday through Friday from 8am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Trainer, Susy Tsang-Foster can be reached on (571) 272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MBT

MARK RUTHKOSKY  
PRIMARY EXAMINER

*Mark Ruthkosky*  
12.21.2006